

ABSTRACT OF THE DISCLOSURE

A method of carburizing treatment is proposed in which if carburizing is carried out at a low temperature, carbon will not turn amorphous and deposit on the surface of a titanium metal but reliably penetrate into between metallic atoms. It is a method of surface treatment of a titanium metal comprising the steps of heating the titanium metal to a temperature of 400-690 °C in a cleaning gas atmosphere containing hydrogen gas, subjecting the surface of the titanium metal to cleaning by applying a DC voltage of 200-1500 V, and plasma carburizing in an atmosphere comprising a carburizing gas having the molar ratio of hydrogen atoms (H) to carbon atoms (C) adjusted to $1 \leq H/C \leq 9$ at a pressure of 13-400 Pa and a temperature of 400-690 °C. Ionization reaction in the gas is suppressed suitably. Because there exists no excessive carbon which is not used for carburization but turns soot or glass-like carbon, in the atmosphere during carburization, carburizing reaction progresses smoothly.